CHAPTER TWELVE

FRONT SUSPENSION, WHEEL BEARINGS, AND STEERING

RX-2's and RX-3's use a McPherson strut front suspension. The shock absorbers and springs are incorporated into a single unit, with the bearing spindles permanently attached at the bottom. The struts are attached to the fender apron by 3 studs. At the bottom, the struts are attached to the suspension arms through ball-joints. The suspension arms are connected by a stabilizer bar. **Figure 1** shows the suspension parts for one side.

Both cars use recirculating ball steering, with ratio variable from 17:1 to 19:1. The steering gear and linkage are controlled through a collapsible steering column.

This chapter includes service procedures for the front suspension, wheel bearings, and steering components.

Specifications and tightening torques are given in **Tables 1 through 4** at the end of the chapter.

WHEEL ALIGNMENT

Several front suspension angles affect the running and steering of the front wheels. These angles must be properly aligned to prevent excessive trie wear, as well as to maintain directional stability and ease of steering. The angles are:

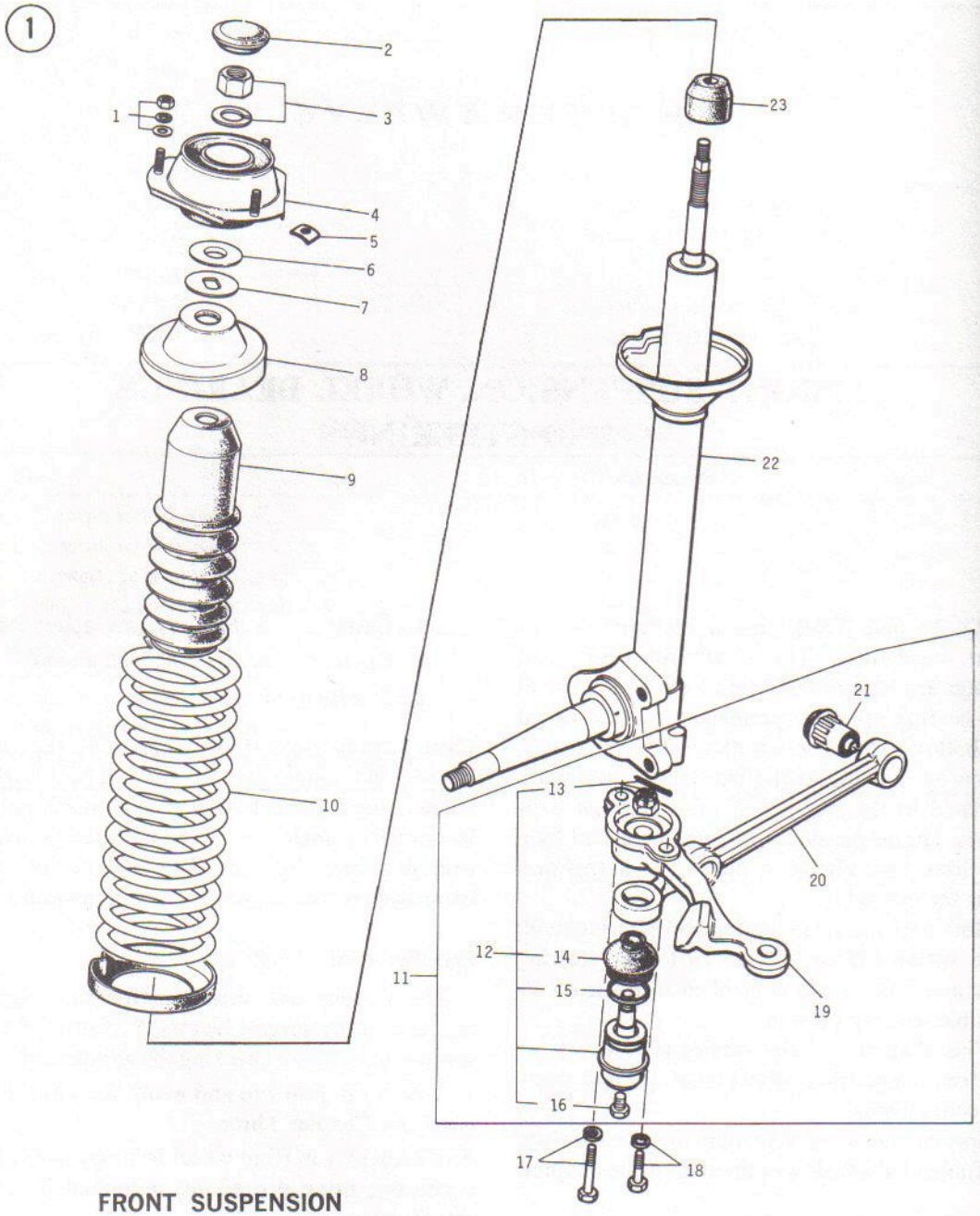
a. Caster
b. Camber
c. Toe-in
d. Steering axis inclination
e. Steering lock angles

Caster, camber, and steering axis inclination are built-in and cannot be measured. These angles are measured to check for bent suspension parts. Steering lock angles cannot be adjusted properly without a front end rack. Toe-in, however, can be measured with a good steel tape measure.

Pre-alignment Check

The steering and various suspension angles are affected by several factors. Perform the following steps before checking the adjustment.

1. Check tire pressure and wear. See *Tire Wear Analysis,* Chapter Three.
2. Check play in front wheel bearings. Adjust if necessary, using procedures described later in this chapter.
3. Check play in ball-joints as described later in this chapter.
4. Check for broken springs.
5. Remove any excessive load.
6. Check shock absorbers.
7. Check rack-and-pinion mechanism and tie rods for looseness.



FRONT SUSPENSION

1. Nut and washers
2. Cap
3. Center nut and washer
4. Mounting pad
5. Adjusting plate
6. Bearing seat
7. Bearing
8. Spring seat
9. Dust cover
10. Suspension spring
11. Suspension arm assembly
12. Ball-joint
13. Cotter pin
14. Dust seal
15. Snap ring
16. Grease plug
17. Knuckle arm-to-strut bolt and washer
18. Knuckle arm-to-strut bolt and washer
19. Knuckle arm
20. Suspension arm
21. Bushing
22. Strut
23. Bushing

8. Check wheel balance.
9. Check rear suspension for looseness.

Front tire wear patterns can indicate several alignment problems. These problems are discussed and analyzed under *Tire Wear Analysis*, Chapter Three.

Caster and Camber

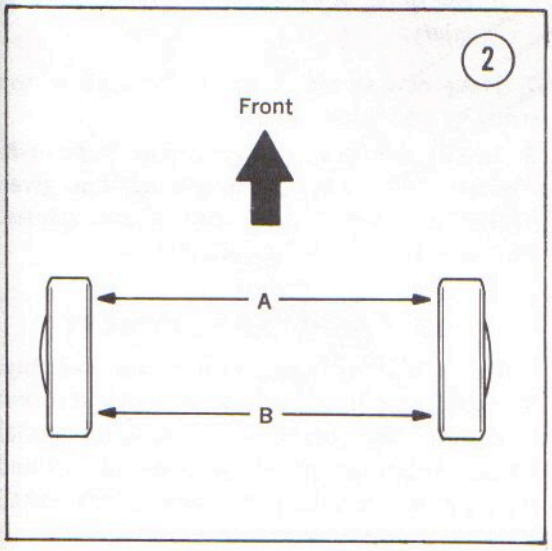
Caster is the inclination of the angle through the vertical through the ball-joints. Positive caster shifts the wheel forward; negative caster shifts the wheel rearward. Caster causes the wheels to return to the straight-ahead position after a turn. It also prevents the wheels from wandering due to wind, potholes, or uneven road surfaces.

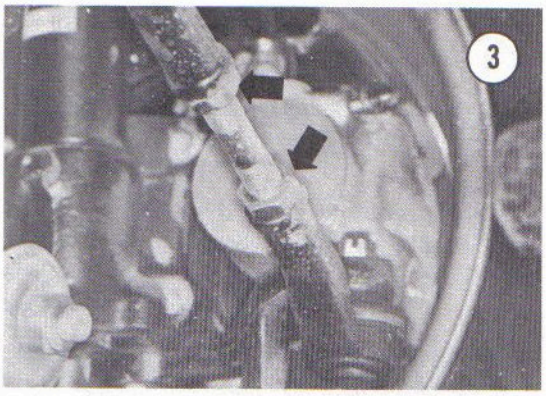
Camber is the inclination of the wheel from the vertical. With positive camber, the top of the tire leans outward; with negative camber, the top of the tire leans inward.

Toe-in

Toe-in should be zero-0.24 in. (zero-6mm) for all models. This means distance (A) in **Figure 2** should range from the same as to 0.24 inch less than distance (B). If toe-in is incorrect, loosen the tie rod locknuts at both wheels (**Figure 3**). Rotate the tie rods to increase or reduce toe-in as needed.

NOTE: *Tie rod lengths should be equal after adjustment.*





Steering Axis Inclination

Steering axis inclination is the inward or outward lean of the angle from vertical through the ball-joints. It is not adjustable on the RX-2 or RX-3.

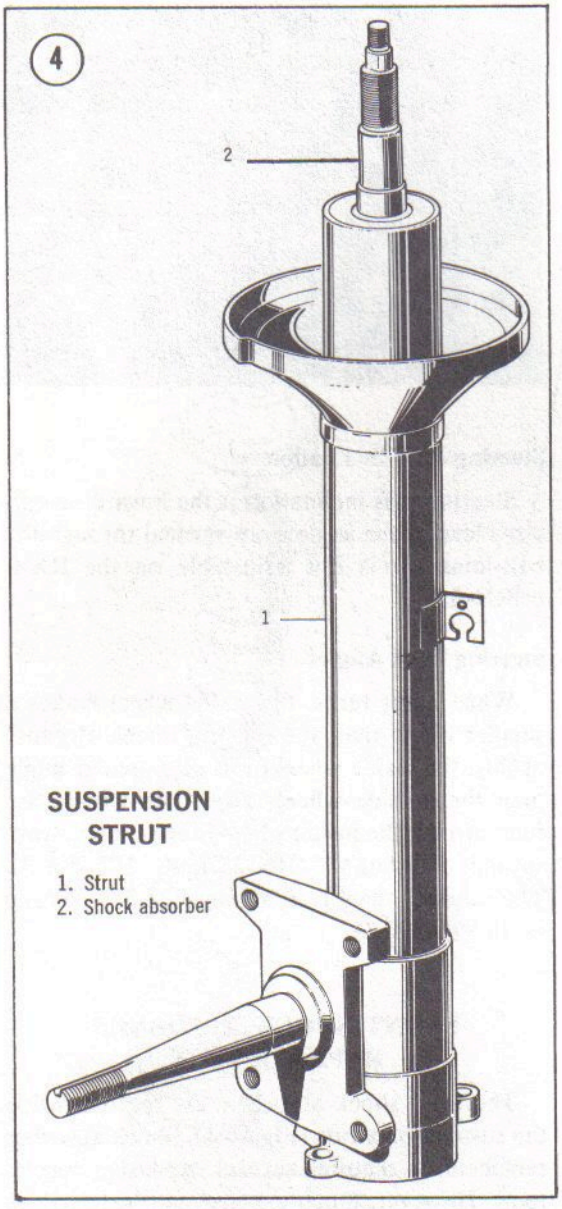
Steering Lock Angles

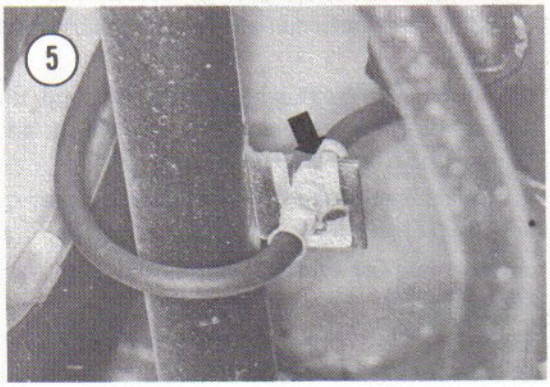
When a car turns, the inside wheel makes a smaller circle than the outside wheel. Because of this, the inside wheel turns at a greater angle than the outside wheel. When the wheels are fully turned, the inside wheel is at an angle from straight ahead of 43° (RX-2) or 40° 10′ (RX-3). The outside wheel is at an angle of 31° (RX-2) or 34° 7′ (RX-3).

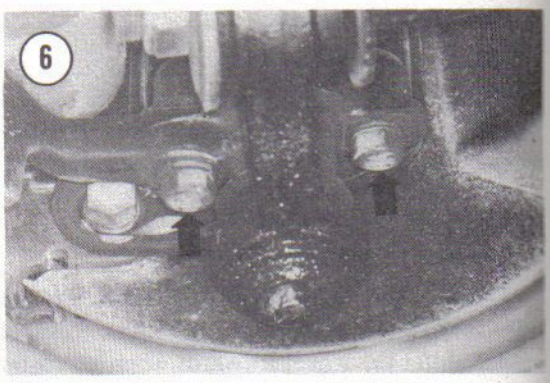
FRONT SHOCK ABSORBER REPLACEMENT

The front shock absorbers are located inside the suspension struts (**Figure 4**). Shock absorber replacement requires several expensive special tools. However, much expense can be saved by removing the strut assemblies yourself and taking them to a dealer to have the shock absorbers replaced.

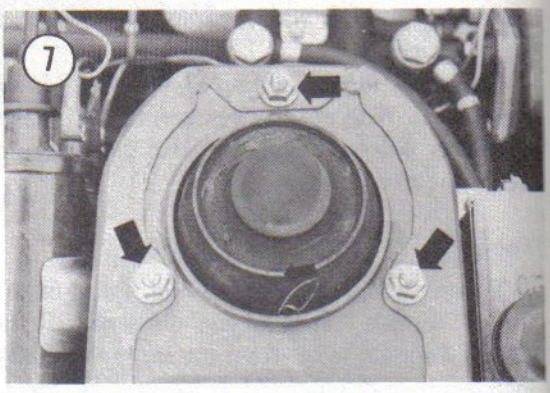
1. Loosen the front wheels nuts, jack up the front end of the car, place it on jackstands, and remove the front wheels.
2. Detach the brake hose from the bracket on the strut (**Figure 5**).
3. Remove the brake caliper and disc (see Chapter Ten).
4. Remove the 2 bolts attaching the bottom end of the strut to the knuckle arm (**Figure 6**).







5. Remove 3 nuts attaching the top of the strut to the fender apron (**Figure 7**).



6. Push the control arm down, then remove the strut from the car.

WARNING

Do NOT remove the center nut at the top of the strut. This could allow the coil spring to fly out and cause serious injury.

7. Have new shock absorbers installed in the struts by a Mazda dealer.

8. Install the struts by reversing Steps 1-6. Tighten all nuts and bolts to specifications given in Tables 3 and 4 at the end of the chapter. Bleed the brakes after installation.

COIL SPRING REPLACEMENT

The coil spring is part of the strut assembly. To replace the spring, follow the shock absorber procedure. Since the procedure requires special tools, it is best to remove the strut yourself and have a dealer install the new spring. Then install the strut using the same procedure.

STABILIZER

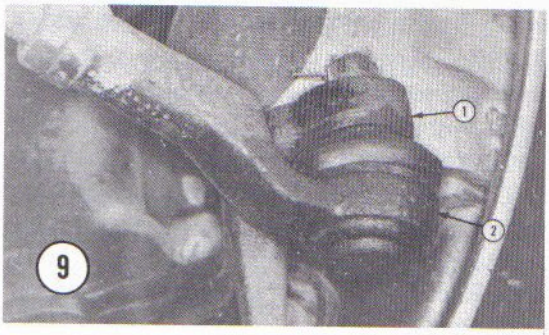
Figure 8 shows the RX-3 stabilizer and attaching parts.

1. Loosen the front wheel nuts, jack up the front end of the car, place it on jackstands, and remove the front wheels.
2. Remove the splash panel from under the front of the car.
3. Unbolt the stabilizer brackets from the crossmember.
4. Remove the nuts attaching the stabilizer to the suspension arms. Lift the stabilizer out.
5. Inspect the rubber mounting bushings for wear, cracking, or general deterioration. Replace as needed.
6. To install, position the end bushings in the suspension arms. Insert the ends of the stabilizer into the suspension arms and loosely install the nuts. Loosely bolt the center brackets and bushings to the crossmember. Install the wheels, lower the car, and tighten the stabilizer nuts and bolts.

SUSPENSION ARMS

Removal, Inspection, and Installation

1. Loosen the front wheel nuts, jack up the front end of the car, place it on jackstands, and remove the front wheels.
2. Detach the tie rod end from the knuckle arm (**Figure 9**). Use Mazda puller 49 018 850C if available. A small gear puller will do if you can't get the Mazda tool.



1. Knuckle arm
2. Tie rod end

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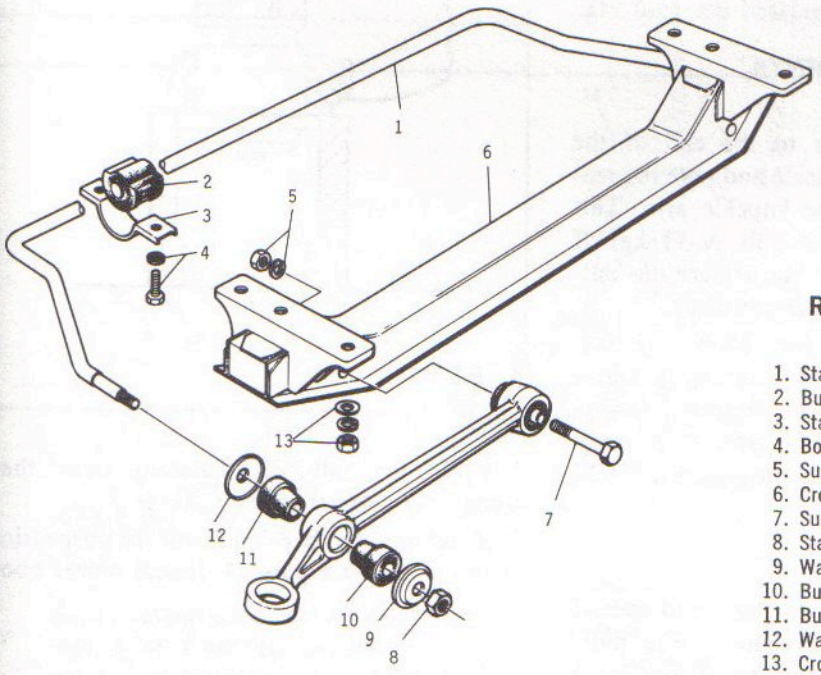


RX-3 STABILIZER

1. Stabilizer
2. Bushing
3. Stabilizer bracket
4. Bolt and washer
5. Suspension arm nut and washer
6. Crossmember
7. Suspension arm pivot bolt
8. Stabilizer nut
9. Washer
10. Bushing
11. Bushing
12. Washer
13. Crossmember nut and washers

3. Remove 2 bolts attaching the knuckle arm to the bottom of the strut (Figure 6). Move the strut away from the knuckle arm.

4. Check the ball-joint for wear as described in the following procedure.

5. Remove the nut attaching the stabilizer to the suspension arm (Figure 8).

6. Remove the bolt attaching the suspension arm to the crossmember (Figure 8). Separate the control arm from the stabilizer. Remove it from under the car, together with the knuckle arm.

7. Place the suspension arm in a vise. Remove the ball-joint stud nut. Remove the knuckle arm, using Mazda puller 49 0727 525 if available. Use a gear puller if you can't get the Mazda tool.

8. Check the suspension and knuckle arms for wear, bends, or cracks. Replace if any of these conditions is found. Examine the rubber bushings. Replace any that are worn, cracked, or deteriorated.

9. If the ball-joint was found defective in Step 4, replace it as described in following procedure.

10. Installation is the reverse of these steps. Tighten all nuts and bolts to specifications given at the end of the chapter.

BALL-JOINTS

Inspection

1. Attach a spring scale to the end of the knuckle arm. Pull on the scale and note the tension required to move the knuckle arm. This should range from 13.2-24.2 lb. (6-11 kg). If tension is not within this range, replace the ball-joint as described in the next procedure.

2. Remove the knuckle arm. Move the ball-joint stud up and down and measure the movement (ball-joint end-play). Normal end-play ranges from zero to 0.008 in. (zero to 0.2mm). Replace the ball-joint if end-play exceeds 0.020 inch (0.5mm).

Replacement

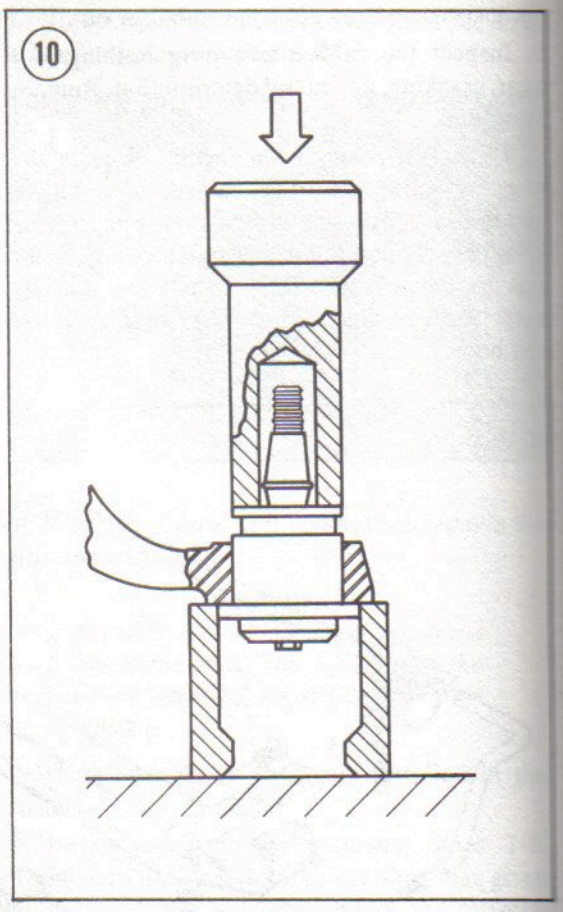
This procedure requires a press and special tools for removal and installation. The most practical approach for home mechanics is to remove the suspension arm and take it to a dealer for ball-joint replacement.

1. Remove the suspension arm and separate it from the knuckle arm as described earlier in this chapter.

2. Remove the rubber dust boot and its retaining ring from the ball-joint.

3. Clean the ball-joint and suspension arm so that ball-joint mounting bore won't be scored when the ball-joint is pressed out.

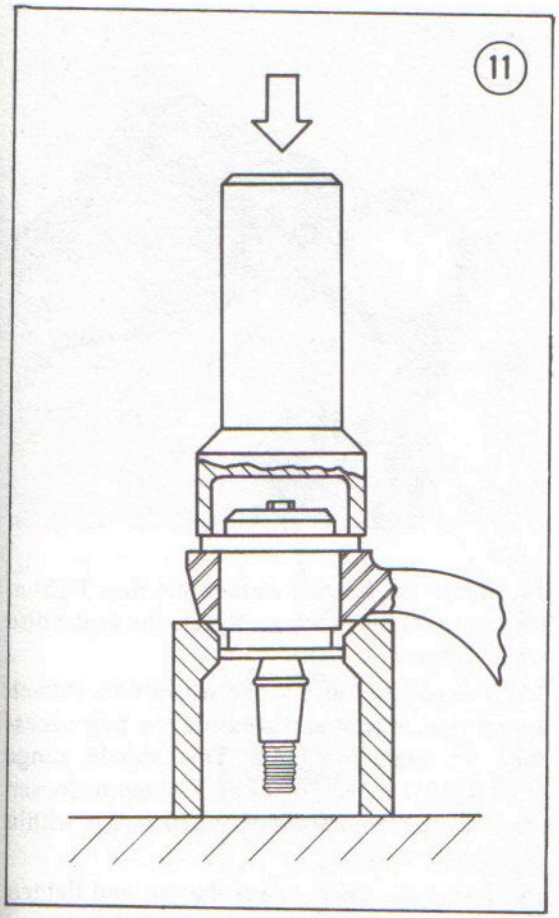
4. Place the suspension arm in a press. Press out the ball-joint, using a support and drift such as Mazda tool set 49 0370 860 (**Figure 10**).



5. Clean the ball-joint mounting bore, then lubricate it with kerosene.

6. Press the new ball-joint into the suspension arm as shown in **Figure 11**. Install rubber boot.

NOTE: *If the ball-joint can be pressed in with a force less than 3,300 pounds (1,500 kg), the mounting bore is too large. The suspension arm must be replaced.*



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WHEEL BEARINGS

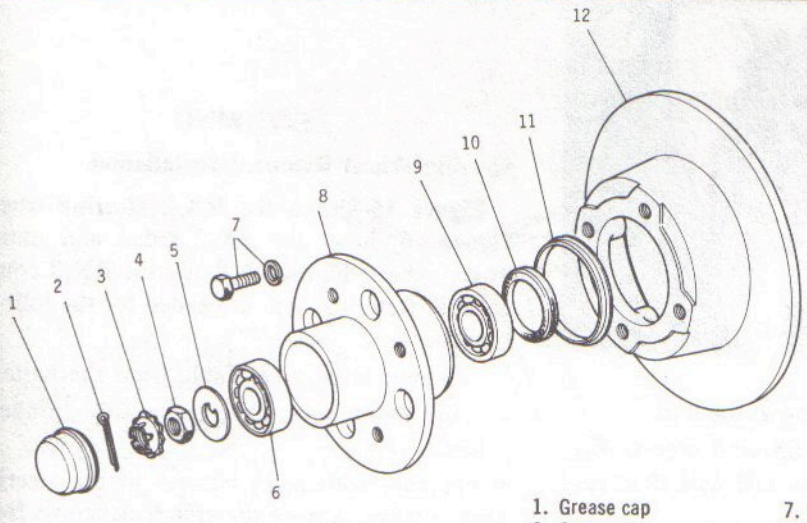
Figure 12 shows the RX-3 wheel bearing components. The RX-2 arrangement is basically the same. Refer to it as needed for the following procedures.

Removal

1. Loosen the front wheel nuts, jack up the front end of the car, place it on jackstands, and remove the front wheel(s).
2. Remove the brake caliper (Chapter Ten).
3. Pry the grease cap from the hub. Tap lightly with a mallet to free the cap.
4. Remove the cotter pin from the nut lock and bearing spindle. Take the nut lock off, then remove the nut and washer.
5. Using both hands, pull the hub and brake disc off the bearing spindle. The bearings will come off together with the hub.

Disassembly and Inspection

1. Take the outer wheel bearing out of the hub.
2. If necessary, remove 4 bolts attaching the hub to the brake disc, then separate hub and disc.
3. Pry out the dust ring and grease seal, then take the inner bearing out of the hub.



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RX-3 WHEEL BEARING (RX-2 Similar)

1. Grease cap
2. Cotter pin
3. Nut lock
4. Wheel bearing nut
5. Wheel bearing washer
6. Wheel bearing
7. Disc-to-hub bolt and washer
8. Hub
9. Wheel bearing
10. Grease seal
11. Dust ring
12. Brake disc

4. Discard the cotter pin, dust ring, and grease seal. Thoroughly clean remaining parts in solvent and blow dry.

CAUTION

Do not let compressed air spin the bearings when blowing them dry.

5. Examine the nut lock. Replace it if wear or damage is visible.

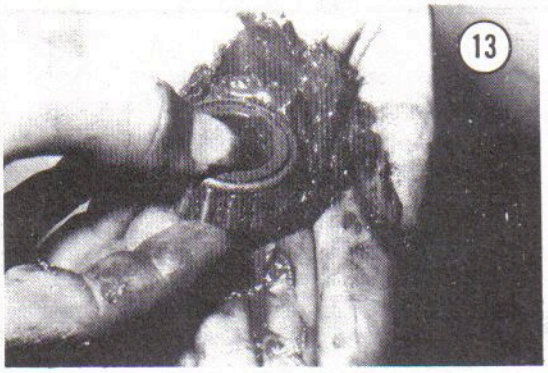
6. Check bearings and cups for rusting, galling, and the bluish tint that indicates overheating. Rotate the bearings and check for roughness, looseness, and excessive noise. If a cup or bearing shows any of these conditions, replace cup and bearing as a set.

7. If a bearing cup must be replaced, drive it out with a brass drift. Drive in a new cup, using a drift (such as a piece of pipe) the same diameter as the cup.

8. Bolt the disc to the hub (if removed). Tighten the bolts to 36 ft.-lb. (5 mkg).

9. Make sure the hub is completely clean. Pack it with lithium grease until the grease is approximately flush with both bearing cups.

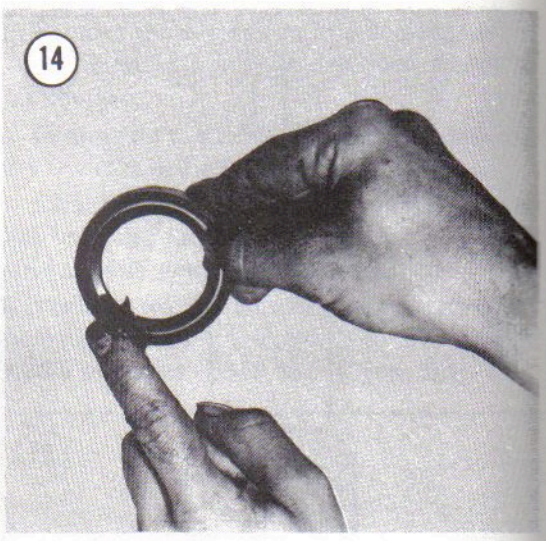
10. Pack the bearings with grease. Work as much grease as possible between the rollers. Put grease in one hand and drag the bearing through it (**Figure 13**).



11. Install the inner bearing in the hub.

12. Coat the grease seal lip with grease (**Figure 14**). Install the grease seal and dust ring in the hub.

13. Install the outer bearing in the hub. Carefully position the hub on the bearing spindle. Do not let the grease seal rub against the spindle while installing the hub.



14. Install the bearing washer and nut. Tighten the nut to set the bearings. Rotate the brake disc while tightening.

15. Temporarily install one wheel bolt. Attach a spring scale to it and measure the pull necessary to rotate the hub. This should range from 0.9-2.2 lb. (0.4-1.0 kg). Tighten or loosen the bearing nut until the required pull is within the correct range.

16. Install the wheel, lower the car, and tighten the wheel nuts. Pump the brake pedal several times to seat the pads.

STEERING

Steering Wheel Removal/Installation

Figure 15 shows the RX-2 steering wheel. **Figure 16** shows the RX-3 sedan and station wagon wheel; **Figure 17** shows the RX-3 coupe version. Refer to them as needed for the following procedure.

1. Disconnect negative cable from the battery.

2. Turn the steering wheel to the straight-ahead position.

3. On cars with horn buttons in the steering wheel spokes, remove the attaching screws from the backs of the spokes. On RX-2's with a center horn button, press down on the button and turn counterclockwise to remove it. On RX-3's, gently pull the button off.

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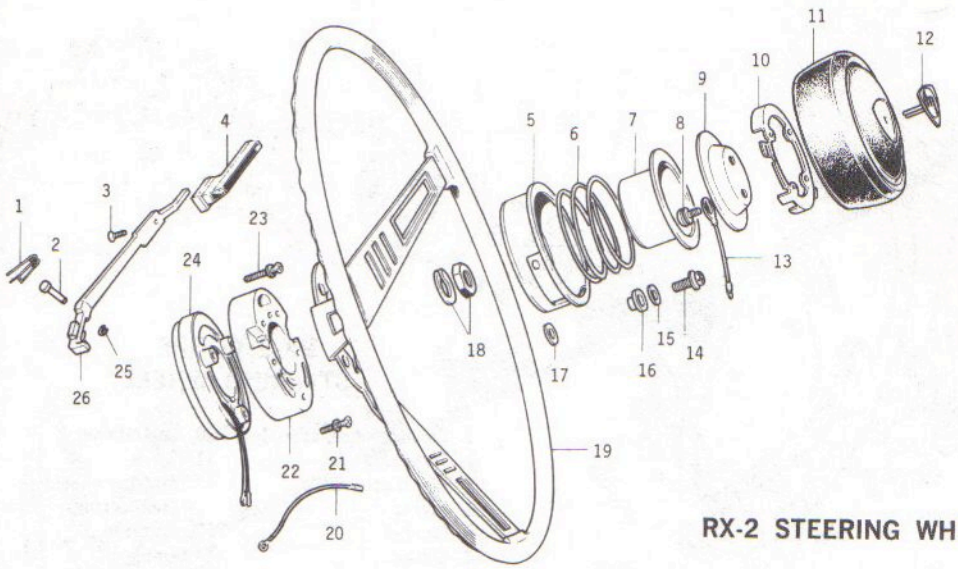
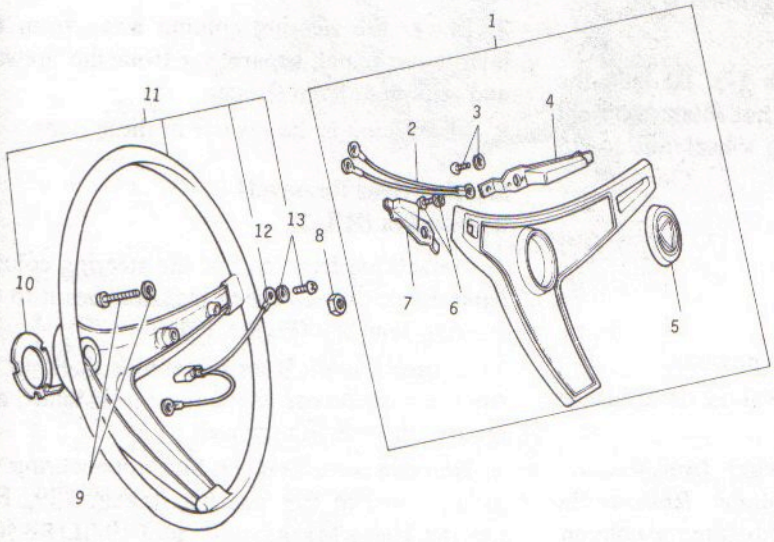


RX-2 STEERING WHEEL

1. Return spring
2. Shaft
3. Horn lever screw
4. Horn lever end
5. Cap retainer
6. Spring
7. Contact cap
8. Setscrew
9. Contact plate
10. Cap retainer
11. Horn cap
12. Emblem
13. Horn wire
14. Setscrew
15. Washer
16. Insulator
17. Insulator
18. Steering wheel and lockwasher
19. Steering wheel
20. Ground wire
21. Screw
22. Boss
23. Screw
24. Terminal
25. Snap ring
26. Horn lever

16

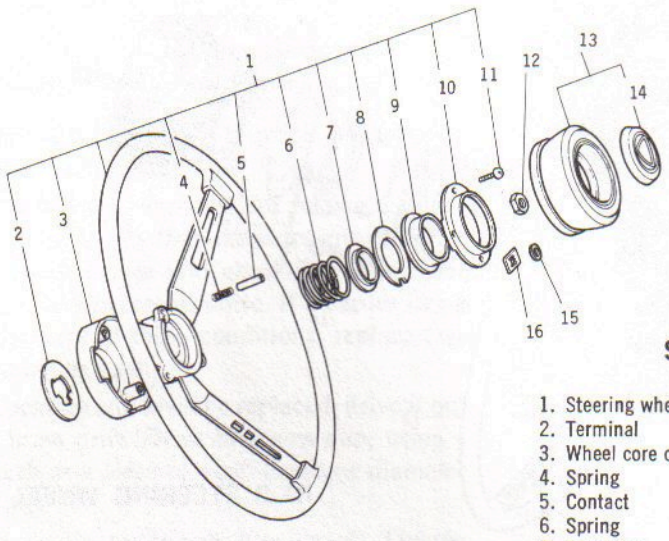


RX-3 SEDAN AND WAGON STEERING WHEEL

1. Horn cap assembly
2. Horn wires
3. Cap retainer screw and washer
4. Horn button
5. Emblem
6. Cap retainer screw and washer
7. Horn button
8. Steering wheel nut (self-locking)
9. Horn cap screw and washer
10. Terminal
11. Steering wheel
12. Horn wires
13. Screw and washer

12

(17)



RX-3 COUPE STEERING WHEEL

1. Steering wheel assembly
2. Terminal
3. Wheel core cover
4. Spring
5. Contact
6. Spring
7. Insulator
8. Contact plate
9. Cap retainer
10. Cap retainer
11. Screw
12. Steering wheel nut (self-locking)
13. Horn cap
14. Emblem
15. Emblem washer
16. Speed nut

4. Make alignment marks on the steering wheel and column so the wheel can be put back on straight.

5. Remove the large nut in the center of the steering wheel, then remove the wheel.

> NOTE: *Do not allow the wheels to be turned while the steering wheel is off the car.*

6. Install by reversing Steps 1-5. Be sure the steering wheel is on straight, not rotated to right or left. Tighten the steering wheel nut to 25 foot-pounds (3.5 mkg).

Steering Column Removal/ Installation (RX-2)

Refer to **Figure 18** for this procedure.

1. Remove the steering wheel as described in the previous procedure.

2. Remove the headlight switch from the left-hand side of the steering column. Remove the screws attaching the column shell to the column, then remove the shell halves.

3. Unplug the combination switch wires.

4. Detach the front end of the column from the flexible coupling that joins it to the steering gear box.

5. Remove 3 bolts attaching the steering column seal to the firewall.

6. Unbolt and remove the steering column bracket.

7. Lower the steering column away from the instrument panel, separate it from the firewall, and remove it from the car.

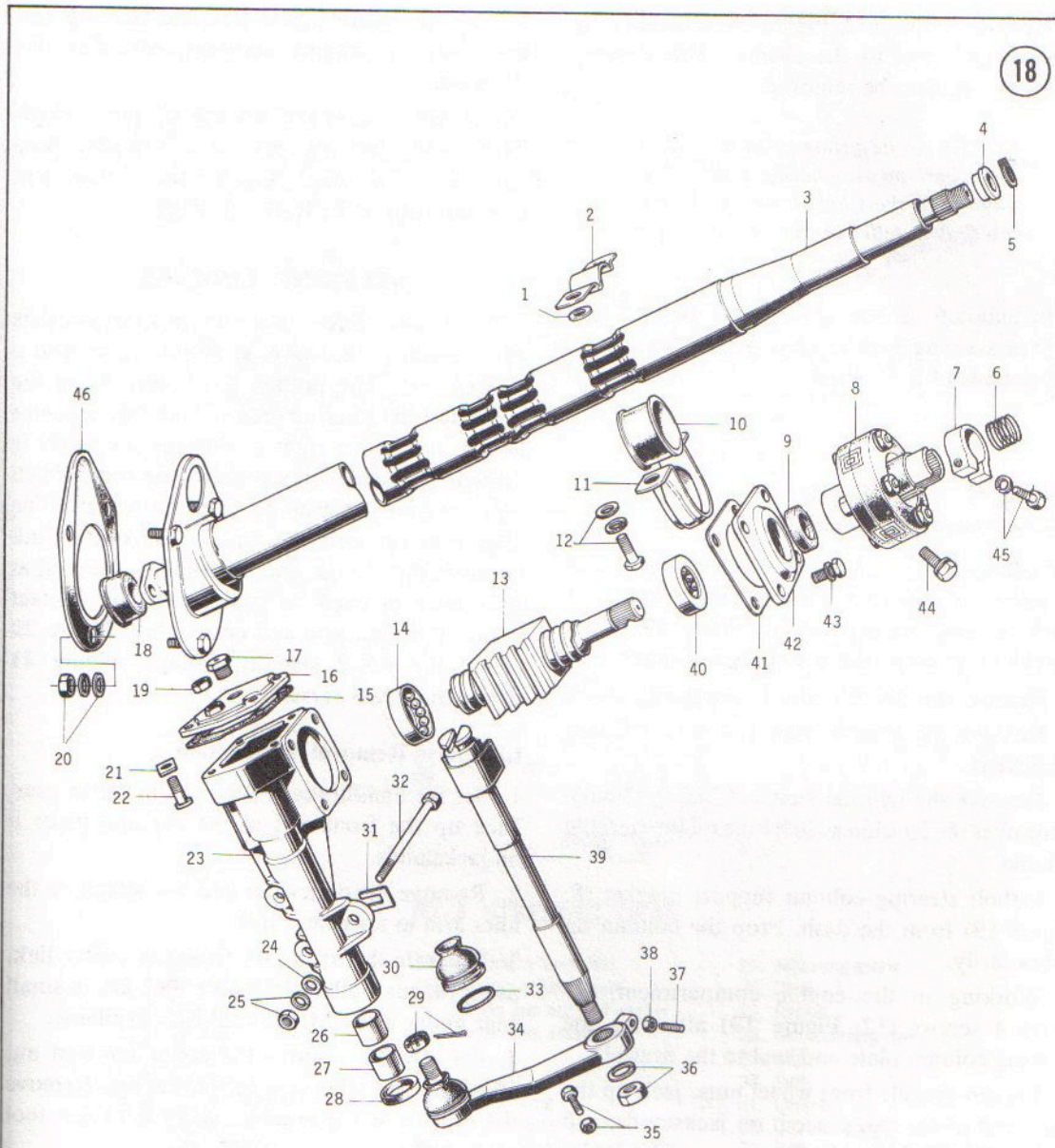
8. Installation is the reverse of these steps.

Steering Gear Removal/ Installation (RX-2)

1. Detach the front end of the steering column from the flexible coupling that attaches it to the steering gear box (Figure 18).

2. Loosen the left front wheel nuts, jack up the front end of the car, place it on jackstands, and remove the left front wheel.

3. Remove the cotter pin and nut securing the pitman arm to the steering linkage (29, Figure 18). Using Mazda puller tool 49 0118 850C, detach the pitman arm from the linkage. Use a small gear puller if Mazda tool isn't available.



RX-2 STEERING GEAR

1. Spacer
2. Upper bracket
3. Collapsible column
4. Bushing
5. Snap ring
6. Spring
7. Clamp
8. Flexible coupling
9. Oil seal
10. Bushing
11. Lower bracket
12. Bolt and washers
13. Ball nut
14. Ball bearing
15. Gasket
16. Cover
17. Oil filler plug
18. Centering bushing
19. Locknut
20. Nut and washers
21. Adjusting shim
22. Adjusting screw
23. Gear housing
24. Washer
25. Nut and washer
26. Bushing
27. Bushing
28. Oil seal
29. Nut and cotter pin
30. Dust seal
31. Adjusting shim
32. Gear housing bolt
33. Snap ring
34. Pitman arm
35. Steering lock angle adjusting bolt and locknut
36. Pitman arm nut and lockwasher
37. Bolt
38. Locknut
39. Sector shaft
40. Ball bearing
41. End cover shim
42. End cover
43. End cover bolt
44. Bolt
45. Clamp bolt and washer

4. Remove 3 bolts (32, Figure 18) attaching the steering gear box to the chassis. The steering gear box can then be removed.

NOTE: *An adjusting shim is used on one gear box-to-chassis bolt. Note which bolt the shim is used with so it can be reinstalled in the same position.*

5. Installation is the reverse of these steps. Tighten steering gear-to-chassis bolts to 33-41 foot-pounds (4.5-5.7 mkg).

Steering Gear and Column Removal/Installation (RX-3)

Unlike the RX-2, the RX-3 steering gear and column are combined into a single unit and can't be removed separately. **Figure 19** shows the RX-3 steering gear and column components.

1. Remove the steering wheel, described earlier.
2. Remove the combination switch (see Chapter Seven).
3. Remove the ignition switch (Chapter Four). Tape over the ignition switch hole on the steering column.
4. Unbolt steering column support bracket (8, Figure 19) from the dash. Prop the column up temporarily.
5. Working in the engine compartment, remove 4 screws (17, Figure 19) attaching the steering column plate and seal to the firewall.
6. Loosen the left front wheel nuts, jack up the front end of the car, place it on jackstands, and remove the left front wheel.
7. Remove the cotter pin and nut (29, Figure 19) securing the pitman arm to the steering linkage. Detach the pitman arm from the linkage, using Mazda puller tool 49 0118 850C. Use a small gear puller if the Mazda tool isn't available.
8. Remove 3 bolts (32, Figure 19) attaching the steering gear box to the chassis.

NOTE: *An adjusting shim is used on one of the gear box-to-chassis bolts. Note the position of the shim so it can be reinstalled on the same bolt.*

9. Pull the steering gear box and steering column into the engine compartment, then lift them out.
10. Installation is the reverse of these steps. Tighten the steering gear box-to-chassis bolts to 36 ft.-lb. (5 mkg). Tighten the pitman arm ball-joint nut to 22 ft.-lb. (3 mkg).

STEERING LINKAGE

RX-2 and RX-3 steering linkage consists of 2 tie rods, a center link, an idler arm, and a pitman arm. The pitman arm, attached to the bottom of the steering gear box, pulls the center link to the left or right as the steering wheel is turned. The center link pulls the tie rods, which pull the knuckle arms to turn the wheels. The idler arm supports the end of the center link opposite the pitman arm. Ball-joints are used at both ends of each tie rod and at the contact point of pitman arm and center link. **Figure 20** shows the RX-2 steering linkage; **Figure 21** shows the RX-3 version.

Idler Arm Removal/Installation

1. Set the handbrake and place the car in gear. Jack up the front end of the car and place it on jackstands.
2. Remove the cotter pin and nut attaching the idler arm to the center link.
3. Separate the idler arm from the center link, using Mazda puller 49 0118 850C. Use a small gear puller if the Mazda tool isn't available.
4. On RX-2's, remove the cotter pin and nut attaching the idler arm to its bracket. Remove the arm from the bracket, using the same tool used in Step 3.
5. On RX-3's, remove 2 bolts attaching the idler arm bracket to the car frame. Remove the bracket together with the idler arm.
6. Installation is the reverse of these steps. Tighten all nuts and bolts to specifications at the end of the chapter. Apply grease liberally to RX-2 idler arm bushings.

Idler Arm Inspection

1. On RX-2's, check the idler arm bushings for wear, cracks, or deterioration. Check the idler arm for wear or damage. Replace as needed.

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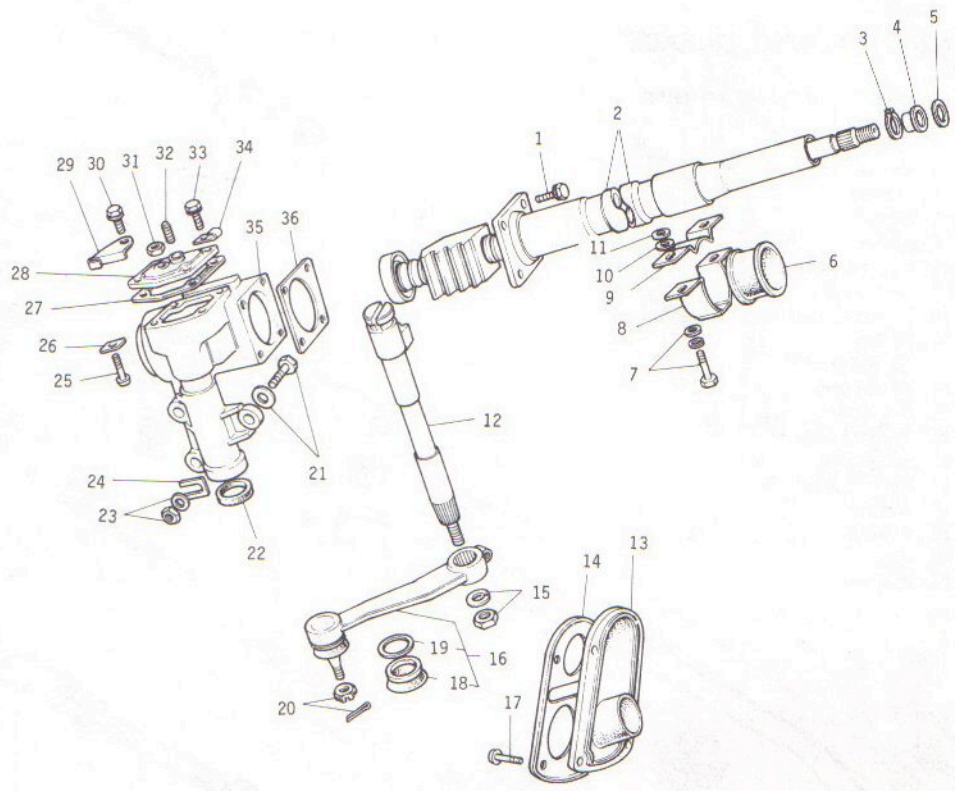

RX-3 STEERING GEAR

1. Bolt
2. Collapsible column
3. Snap ring
4. Bushing
5. Washer
6. Bushing
7. Bolt and washers
8. Lower bracket
9. Upper bracket
10. Washer
11. Washer
12. Sector shaft
13. Steering column seal
14. Steering column plate
15. Pitman arm nut and washer
16. Pitman arm assembly
17. Bolt
18. Dust seal
19. Securing ring
20. Nut and cotter pin
21. Gear housing bolt and washer
22. Oil seal
23. Nut and washer
24. Shim
25. Adjusting screw
26. Shim
27. Gasket
28. Gear housing cover
29. Clip
30. Bolt
31. Locknut
32. Oil filler plug
33. Bolt
34. Clip
35. Gear housing
36. End cover shim

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2. On RX-3's, place the idler arm in a soft-jawed vise. Remove the cotter pin and nut attaching the arm to the bracket. The bracket, bushings, and washer can then removed from the idler arm. Check the bushings for wear, cracks, or deterioration. Check the idler arm and its ball-joint for wear or damage. Replace if damage is visible. After inspection, liberally apply grease to the bushings. Assemble the idler arm, referring to Figure 21. Tighten idler arm-to-bracket nut to 47 ft.-lb. (6.5 mkg) and secure it with a new cotter pin.

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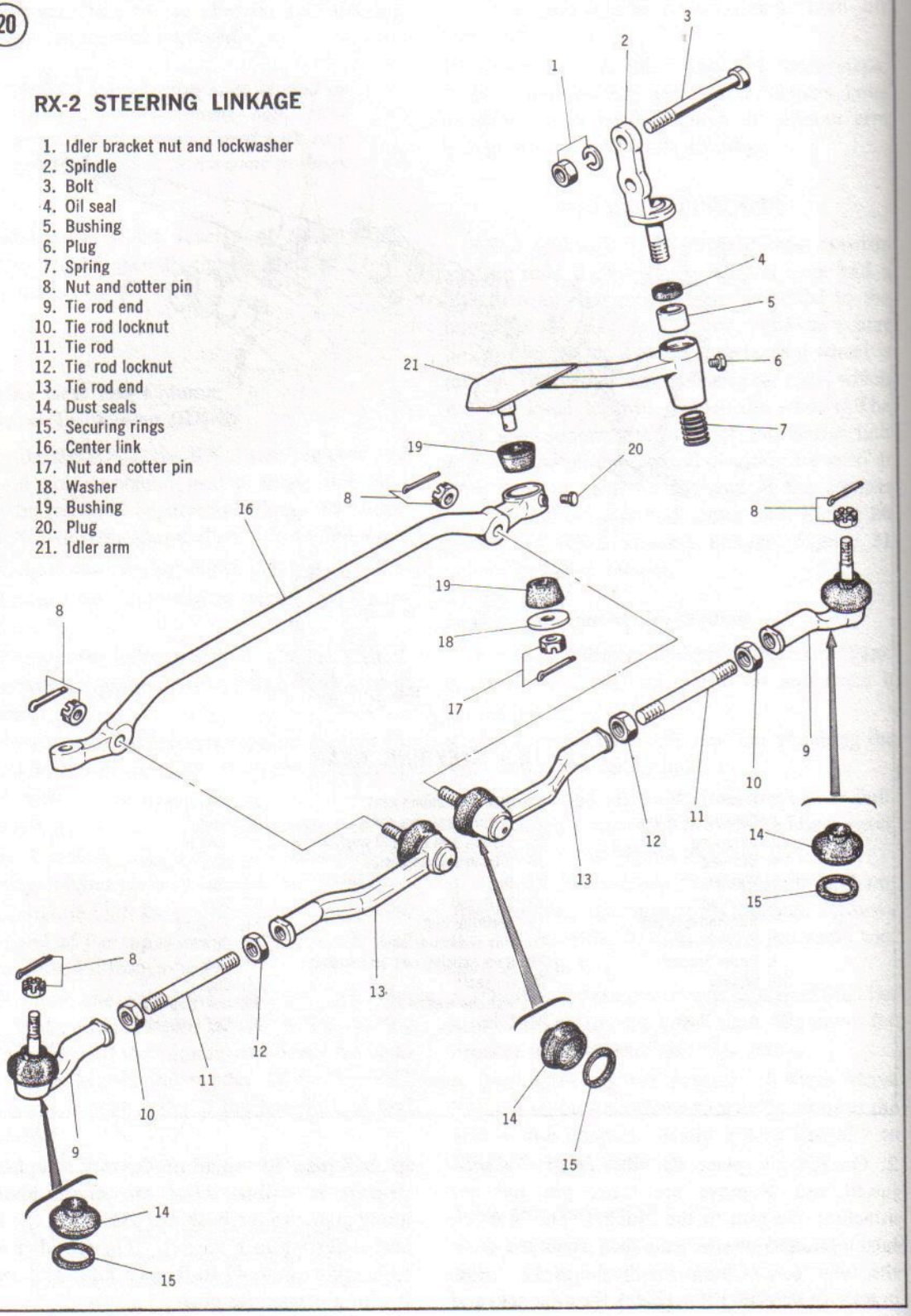
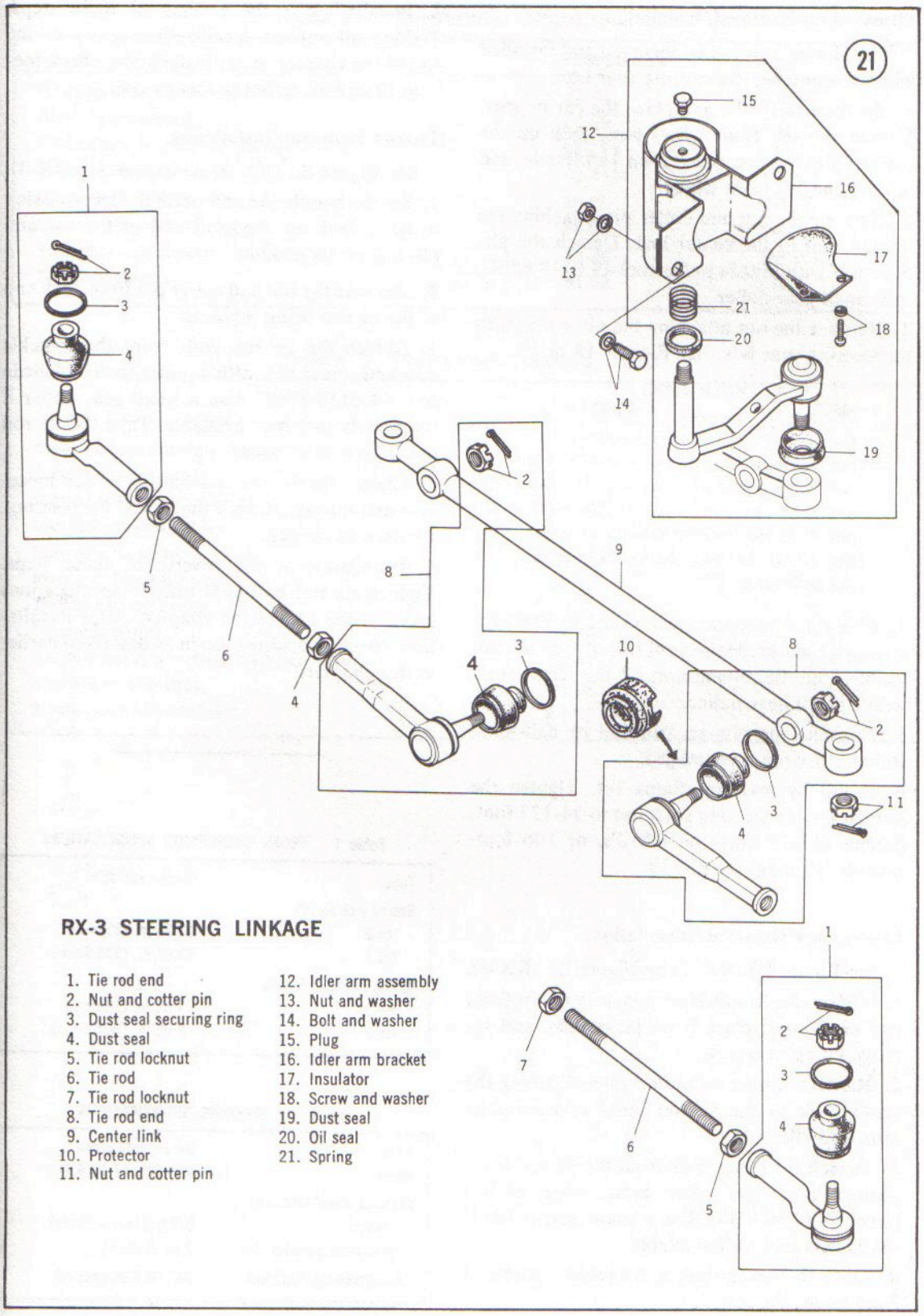
RX-2 STEERING LINKAGE

1. Idler bracket nut and lockwasher
2. Spindle
3. Bolt
4. Oil seal
5. Bushing
6. Plug
7. Spring
8. Nut and cotter pin
9. Tie rod end
10. Tie rod locknut
11. Tie rod
12. Tie rod locknut
13. Tie rod end
14. Dust seals
15. Securing rings
16. Center link
17. Nut and cotter pin
18. Washer
19. Bushing
20. Plug
21. Idler arm





RX-3 STEERING LINKAGE

1. Tie rod end
2. Nut and cotter pin
3. Dust seal securing ring
4. Dust seal
5. Tie rod locknut
6. Tie rod
7. Tie rod locknut
8. Tie rod end
9. Center link
10. Protector
11. Nut and cotter pin
12. Idler arm assembly
13. Nut and washer
14. Bolt and washer
15. Plug
16. Idler arm bracket
17. Insulator
18. Screw and washer
19. Dust seal
20. Oil seal
21. Spring

Pitman Arm Removal/Installation

The pitman arm can be removed and installed without removing the steering gear box.

1. Set the handbrake and place the car in gear. Loosen the left front wheel nuts, jack up the front end of the car, place it on jackstands, and remove the left front wheel.
2. Remove the nut and cotter pin attaching the pitman arm to the center link. Detach the pitman arm with Mazda puller tool 49 0118 850C, or a small gear puller.
3. Remove the nut attaching the pitman arm to the steering gear box. See Figures 18 or 19.

WARNING

The nut is torqued to 106 ft.-lb. Be sure the car is securely positioned on the jackstands before removing the nut. Do not attempt to remove it without a breaker bar and socket. DO NOT pound on the breaker bar when removing, or the car may be knocked from the jackstands.

4. Check the pitman arm and sector shaft for alignment marks. Make your own if they are not visible. Pull the pitman arm off the sector shaft with a small gear puller.
5. Examine the pitman arm and its ball-joint. Replace if worn or damaged.
6. Install by reversing Steps 1-4. Tighten the pitman arm-to-steering shaft nut to 94-123 foot-pounds (13-17 mkg) on RX-2's, or 106 foot-pounds (15 mkg) on RX-3's.

Center Link Removal/Installation

See Figure 20 (RX-2) or Figure 21 (RX-3).

1. Loosen the front wheel nuts, jack up the front end of the car, place it on jackstands, and remove the front wheels.
2. Remove 4 nuts and cotter pins attaching the center link to the tie-rod inner ends, pitman arm, and idler arm.
3. Detach the center link from the tie rod ends, pitman arm, and idler arm, using Mazda puller 49 0118 850C. Use a small gear puller if the Mazda tool isn't available.
4. Once the center link is detached, remove it from under the car.
5. Installation is the reverse of these steps. Tighten all nuts to specifications given at the end of the chapter. After installation, check toe-in as described earlier in this chapter.

Tie-rod Removal/Installation

See Figure 20 (RX-2) or Figure 21 (RX-3).

1. Set the handbrake and place the transmission in gear. Jack up the front end of the car and place it on jackstands.
2. Remove the nut and cotter pin from each end of the tie rod being removed.
3. Detach the tie rod ends from the knuckle arm and center link with a puller such as Mazda tool 49 0118 850C. Use a small gear puller if the Mazda tool isn't available. Take the tie rod out from under the car.
4. Check the tie rod end ball-joints for looseness and damage. Check the tie rod for bending. Replace as needed.
5. Installation is the reverse of these steps. Tighten tie rod ball-joint nuts to specifications given at the end of the chapter. After installation, check and adjust toe-in as described earlier in this chapter.

Table 1 FRONT SUSPENSION SPECIFICATIONS

Type	McPherson strut
Spring free length	
RX-2	13.86 in. (352mm)
RX-3	13.33 in. (338.5mm)
Spring installed length	
RX-2	7.64 in. (194mm)
RX-3	8.05 in. (204.5mm)

Table 2 STEERING SPECIFICATIONS

Type	Recirculating ball
Ratio	Variable, 17:1-19:1
Steering wheel free-play	
Normal	0.2-0.8 in. (5-20mm)
Maximum permissible	2 in. (50mm)
Recommended lubricant	SAE 90 E.P. gear oil

Table 3 TIGHTENING TORQUES, RX-2

	Foot-pounds	Mkg
Steering gear housing to chassis	33-41	4.5-5.7
Steering wheel nut	22-29	3-4
Pitman arm to sector shaft nut	94-123	13-17
Idler arm bracket bolts	33-41	4.5-5.7
Idler arm to bracket nut	36-58	5-8
Idler arm to center link nut	36-58	5-8
Tie rod ball-joint nuts	18-25	2.5-3.5
Tie rod locknuts	51-58	7-8

Table 4 TIGHTENING TORQUES — RX-3

	Foot-pounds	Mkg
Steering gear housing to chassis	32-40	4.4-5.5
Steering wheel nut	22-29	3-4
Pitman arm to sector shaft	94-123	13-17
Idler arm to bracket nut	47	6.5
Idler arm to center link nut	18-25	2.5-3.5
Idler arm bracket bolts	32-40	4.4-5.5
Tie rod ball-joint nuts	22-32	3.0-4.5
Tie rod locknuts	51-58	7-8
Suspension arm to crossmember	29-40	4.0-5.5
Knuckle arm to strut	46-69	6.4-9.5
Suspension ball-joint nut	43-51	6-7